



Form PTO-1449	
ATTY DOCKET NO. 74-00	SERIAL NO. 09/974,716
APPLICANT: Hua et al.	
FILING DATE October 9, 2001	
GROUP 1621	

U.S. PATENT DOCUMENTS

Exmr. Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	5,958,970	9/28/99	Hua et al.	514	455	

FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Subclass	Translation Yes/No
<i>SW</i>	WO 98/39010	9/11/98	WO	A61K 31/54	31/535	

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

<i>SW</i>	P. Bartlett et al., Triptycene (9,10-o-Benzenoanthracene), J. Am. Chem. Soc. 64:2649-53, 1942
<i>SW</i>	P. Bedworth et al., The synthesis of a symmetrically substituted α -octa(isopentoxy)anthralocyanine, J. Chem. Soc. Chem. Commun. 1353-54, 1997
<i>SW</i>	A. Begleiter et al., Characterization of L5178Y murine lymphoblasts resistant to quinone antitumor agents, Cancer Res. 48:1727-35, 1988
<i>SW</i>	A. Brunmark et al., Redox and addition chemistry of quinoid compounds and its biological implications, Free Radical Biol. & Med. 7:435-477, 1989
<i>SW</i>	Criswell et al., Studies related to the conversion of 9,10-anthraquinones to anthracenes, J. Org. Chem. 39(6):770-774, 1974
<i>SW</i>	J. Daub et al., Chirale elektronentransfer-aktive chinone mit triptycen-teilstrukturen: Synthesekonzeption und eigenschaften, Chem. Ber. 121:2187-2194, 1988
<i>SW</i>	A. Etienne, Dihydroxy-1,4 anthracene et derives alcoyles correspondants. Leur photooxydation et leur photodimerisation, Séance Du 1233-1235, 1955
<i>SW</i>	R. Ganapathi et al., Modulation of doxorubicin-induced chromosomal damage by calmodulin inhibitors and its relationship to cytotoxicity in progressively doxorubicin-resistant tumor cells, Biochem. Pharmacology 40(7):1657-1662, 1990
<i>SW</i>	S. Ham et al., Studies on menadione as an inhibitor of the cdc25 phosphatase, Bioorg. Chem. 25:33-36, 1997
<i>SW</i>	D. Hamon et al., Reductive elimination of bromine from 2,3-disubstituted 1,4-dibromo-2-butenes by iodide ion: A convenient route to 2,3-bis[iodomethyl]-1,3-butadiene and related compounds, J. Chem. Soc. Chem. Comm. 873-874, November 1981

EXAMINER *Karl Winkler* DATE CONSIDERED 7/12/04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449

ATTY DOCKET NO. 74-00	SERIAL NO. 09/974,716	FILING DATE October 9, 2001
APPLICANT: Hua et al.		GROUP 1621

(S)		D. Hua, Syntheses of substituted 9,10-dihydro-9,10-[1,2]benzenoanthracene-1,4,5,8-tetraones. Unusual reactivities with amines, Abstract of poster presented at ACS 36 th Midwest Regional Meeting, Lincoln, Nebraska, October 10-13, 2001
		D. Hua et al., Syntheses and bioactivities of substituted 9,10-dihydro-9,10-[1,2]benzenoanthracene-1,4,5,8-tetraones. Unusual reactivities with amines, J. Org. Chem. 67:2907-2912, 2002
		D. Hua et al., A one-pot condensation of pyrones and enals. Synthesis of 1 <i>H</i> ,7 <i>H</i> -5 <i>a</i> ,6,8,9-tetrahydro-1-oxopyrano[4,3- <i>b</i>][1]benzopyrans, J. Org. Chem. 62(20):6888-6896, 1997
		S. Hunig et al., 1,4,5,8-tetraoxo-1,4,5,8-tetrahydrothianthrene: synthesis, structure, and spectroelectrochemical properties, Chem. Ber. 126:465-471, 1992
		H. Iwamura et al., 5,8-dihydroxy-9,10-dihydro-9,10-[1,2]benzenoanthracene-1,4-dione. An intramolecular tritycene quinhydrone, J. Chem. Soc. Chem. Comm. 16:720-721, 1978
		T. Jozefiak et al., Mixed-valence, conjugated semiquinones, J. Am. Chem. Soc. 111(11):4105-4106, 1989
		A. Kenani et al., Metal-complexing, DNA-binding and DNA-cleaving properties of a synthetic molecule AMBIGLU, a simplified model for the study of bleomycin, Eur. J. Med. Chem. 24:371-377, 1989
		N. Krishnamachary et al., The MRP gene associated with a non-P-glycoprotein multidrug resistance encodes a 190-kDa membrane bound glycoprotein, Cancer Res 53:3658-3661, 1993
		A. Lin et al., Potential bioreductive alkylating agents. 1. Benzoquinone derivatives, J. Med. Chem. 15(12):1247-1252, 1972
		A. Lin et al., Potential bioreductive alkylating agents. 2. Antitumor effect and biochemical studies of naphthoquinone derivatives, J. Med. Chem. 16(11):1268-1271, 1973
		A. Lin et al., Potential bioreductive alkylating agents. 3. Synthesis and antineoplastic activity of acetoxyethyl and corresponding ethyl carbamate derivatives of benzoquinones, J. Med. Chem. 17(5):558-561, 1974
↓		A. Lin et al., Potential bioreductive alkylating agents. 5. Antineoplastic activity of quinoline-5,8-diones, naphthazarins, and naphthoquinones, J. Med. Chem. 18(9):917-921, 1975
(S)		Y.-H. Ling et al., Apoptosis induced by anthracycline antibiotics in P388 parent and multidrug-resistant cells, Cancer Res. 53:1845-1852, 1993

EXAMINER	<i>Susan Winkler</i>	DATE CONSIDERED	<i>7/12/04</i>
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

Form PTO-1449		
ATTY DOCKET NO. 74-00	SERIAL NO. 09/974,716	FILING DATE October 9, 2001
APPLICANT: Hua et al.		
GROUP 1621		

<i>SW</i>		E. Lipczynska-Kochany et al., Charge-transfer complexation with a new class of electron acceptors made of triptycenequinone unit, Chemistry Letters 7:1075-1078, 1982
		L. Liu, DNA topoisomerase poisons as antitumor drugs, Ann. Rev. Biochem. 58:351-375, 1989
		T. McGrath et al., Adriamycin resistance in HL60 cells in the absence of detectable P-glycoprotein, Biochem. Biophys. Res. Comm. 145(3):1171-1176, 1987
		T. McGrath et al., Mechanisms of multidrug resistance in HL60 cells. Analysis of resistance associated membrane proteins and levels of <i>mdr</i> gene expression, Biochem. Pharmacol. 38(20):3611-3619, 1989
		W. Marsh et al., Relation and characterization of Adriamycin-resistant HL-60 cells which are not defective in the initial intracellular accumulation of drug, Cancer Res. 46:4053-4057, 1986
		W. Marsh et al., Adriamycin resistance in HL60 cells and accompanying modification of a surface membrane protein contained in drug-sensitive cells, Cancer Res. 47:5080-5086, 1987
		D. Marquardt et al., Mechanisms of multidrug resistance in HL60 cells: Detection of resistance-associated proteins with antibodies against synthetic peptides that correspond to the deduced sequence of P-glycoprotein, Cancer Res. 50:1426-1430, 1990
		D. Marquardt et al., Involvement of vacuolar H ⁺ -adenosine triphosphatase activity in multidrug resistance in HL60 cells, J. Natl. Cancer Inst. 83(15):1098-1102, 1991
		E. Mimnaugh et al., Adriamycin-enhanced membrane lipid peroxidation in isolated rat nuclei, Cancer Res. 45:3296-3304, 1985
		H. Moore, Bioactivation as a model for drug design bioreductive alkylation, Science 197:527-532, 1977
		T. Monks et al., Contemporary issues in toxicology. Quinone chemistry and toxicity, Toxicol. Appl. Pharmacol. 112:2-16, 1992
		C. Myers et al., Anthracyclines. Chapter 14, In: <u>Cancer Chemotherapy: Principles and Practice</u> , B. Chabner et al. (eds), Lippincott, pp. 356-381, 1990
		S. Newell et al., Tricyclic pyrone analogs: A new class of microtubule-disrupting anticancer drugs effective against murine leukemia cells in vitro, Int. J. Oncol. 12(2):433-442, 1998
↓		S. Norvez, Liquid crystalline triptycene derivatives, J. Org. Chem. 58:2414-2418, 1993
<i>SW</i>		P. O'Brien, Molecular mechanisms of quinone cytotoxicity, Chem-Biol. Interact. 80:1-41, 1991

EXAMINER <i>S. Witherup</i>	DATE CONSIDERED <i>7/13/04</i>
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Form PTO-1449			
ATTY DOCKET NO. 74-00		SERIAL NO. 09/974,716	FILING DATE October 9, 2001
APPLICANT: Hua et al.			

<i>(S)</i>		H. Patney, A general and simple route to the synthesis of triptycenes, Synthesis 694-696, September 1991
		E. Perchellet et al., Tricyclic pyrone analogs: A new synthetic class of bifunctional anticancer drugs that inhibit nucleoside transport, microtubule assembly, the viability of leukemic cells in vitro, and the growth of solid tumors in vivo, Anti-cancer Drugs 10(5):489-504, 1999
		E. Perchellet et al., Antitumor activity of tricyclic pyrone analogs, a new synthetic class of microtubule de-stabilizing agents, in the murine EMT-6 mammary tumor cell line in vitro, Anti-Cancer Drugs 6(9):565-576, 1998
		J.-P. Perchellet et al., Triptycene analogs: A novel synthetic class of bifunctional anticancer drugs effective in the nanomolar range in vitro, Introduction to Poster Presented at Am. Assoc. for Cancer Research 91 st Annual Meeting, San Francisco, CA, April 1-5, 2000
		J.-P. Perchellet et al., Triptycene analogs: A novel synthetic class of bifunctional anticancer drugs effective in the nanomolar range in vitro, Abstract of Poster Presented at Am. Assoc. for Cancer Research 91 st Annual Meeting, San Francisco, CA, April 1-5, 2000
		J.-P. Perchellet et al., Triptycene analogs: A novel synthetic class of bifunctional anticancer drugs effective in the nanomolar range in vitro, Proceedings of the American Association for Cancer Research 41:602, March 2000
		J.-P. Perchellet et al., Antitumor activity of novel tricyclic pyrone analogs in murine leukemia cells in vitro, Anticancer Research 17:2427-2434, April 1997
		X.-B. Qiu et al., Anticancer quinones induce pRb-preventable G2/M cell cycle arrest and apoptosis, Free Radical Biol. & Med. 24(5):848-854, 1998
		H. Quast et al., ESR-spektroskopischer nachweis intramolekularer wechselwirkungen in radikalkationen von poly(α -methoxy)triptycenen, Chem. Ber. 119:1016-1038, 1986
		H. Quast et al., Intramolekulare wechselwirkungen in radikalkationen von di- und tetra(α -methoxy)-9,10-dihydro-9,10-ethanoanthracenen, Chem. Ber. 119:2414-2429, 1986
		C. Ramachandran et al., Bcl-2 and mdr-1 gene expression during doxorubicin-induced apoptosis in murine leukemic P388 and P388/R84 cells, Anticancer Research 17:3369-3376, 1997
		L. Rossi et al., Quinone toxicity in hepatocytes without oxidative stress, Arch. Biochem. Biophys. 251:25-35, 1986
<i>↓</i>		G. Russell et al., Radical anions of triptycene bis- and tris(quinones), J. Am. Chem. Soc. 103(6):1560-1561, 1981
<i>(S)</i>		V. Skvarchenko et al., Advances in the chemistry of triptycene, Russ. Chem. Rev. 43(11):951-966, 1974

EXAMINER	<i>S. Witherspoon</i>	DATE CONSIDERED	<i>7/13/04</i>
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

Form PTO-1449

ATTY DOCKET NO. 74-00	SERIAL NO. 09/974,716	FILING DATE October 9, 2001
APPLICANT: Hua et al.		GROUP 1621

(S)		B. Wang et al., A synthetic triptycene bisquinone, which blocks nucleoside transport and induces DNA fragmentation, retains its cytotoxic efficacy in daunorubicin-resistant HL-60 cell lines, Int. J. Oncology 19:1169-1178, 2001
↓		B. Wang et al., Antitumor triptycene bisquinones: A novel synthetic class of dual inhibitors of DNA topoisomerase I and II activities, Anti-Cancer Drugs 14:503-514, 2003
(S)		Y. Wang et al., Induction of poly(ADP-ribose) polymerase-1 cleavage by antitumor triptycene bisquinones in wild-type and daunorubicin-resistant HL-60 cell lines, Cancer Letters 188:73-83, 2002

EXAMINER <i>S. Wilhenspoor</i>	DATE CONSIDERED	7/13/04
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		